The MAC Flyer

JULY 1982

Happy Birthday, America!

The MAC Flyer

MILITARY AIRLIFT COMMAND

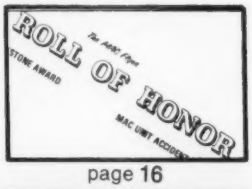
GEN JAMES R. ALLEN Commander in Chief
BRIG GEN PHILIP S. PRINCE Inspector General
COL LOUIE O. McFERON Director of Safety

LT COL ALAN D. YORK Supervising Editor
CAPT GALE E. CLOUSE, JR. Associate Editor
CAPT BYRON L. HOWARD Associate Editor
FRANCES A. CALDWELL Managing Editor
TOM O'LAUGHLIN Art Director

For Greater Safety and Efficiency in MAC Air Operations.

MACRP 127-5 JULY 1982 VOL XXIX NO. 7

page 4



page 16

page 25

The Winners 3
Cross Country 4
Trouble with a Capital "T" 8
Ducking Under 10
Flyers Anonymous 13
Excellence in Airmanship 14
Roll of Honor 16
Mishap with a Moral 18
Drop at Dawn 20
Flying-Hour Milestones 24
C.R. Terror 25
Quick Stoppers 28

The MAC Flyer is published by the Directorate of Safety, Military Airlift Command, and is authorized until 26 Oct 1983, unless authorized to continue before that date. The contents are informative and not regulatory or directive. Names of people and places in mishap stories are fictitious; photos in mishap stories are representative and not necessarily of the aircraft or equipment involved. Information in any article may not be construed as incriminating under Article 31, UCMJ.

Contributions, comments and criticisms are welcome. Write: *The MAC Flyer*, HQ MAC/IGFE, Scott AFB, IL 62225; or call 618-256-3534 or autovon, 638-3534. The editors reserve the right to make any editorial changes in manuscripts which they believe will improve the material without altering the intended meaning.

Subscriptions are available from: The Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Price: $2.50 per copy, $17.00 per year (foreign address $3.15 per copy, $21.26 per year). Changes of address for subscription mailing should be sent to GPO; give old and new address, including zip codes. USAF Active and Air Reserve Forces units establish requirements for this magazine through their publication distributor (DAPD). Other U.S. Military units should consult administrative directives. *The MAC Flyer* is published at an approximate ratio of one magazine for every five MAC aircrew members, and one for every twenty MAC support personnel.

Distribution F, X; OPR: HQ MAC/IGFE
ISSN 0024-788X

The Winners

1982 MAC Flying Safety Writing Contest

First Place

"CROSS COUNTRY"

by Capt David W. Keith
US Air Force Academy,
Colorado

Second Place

"NAPALM NIGHTMARE"

by Maj Rollin C. Broughton, Jr.
374 TAW
Clark AB, Philippines

Third Place

"GHOST IN THE COCKPIT"

by Capt Gregory B. Colvin
Chief, C-130 Special Operations
Career Management Team
Randolph AFB, Texas

Special Category Winner

"Farewell to ARRS"

by Mr. Ralph R. Padfield
Kong Haralds Gate
Madla, Norway

Honorable Mention Winners

"Bad Habits-Not Tricks of the Trade"
and his poem
"The Things That They Learned"

by Capt Jerry M. Brewton
Det 2, 67 ARRS
Ramstein AB, Germany

" Switch' Write-ups"

by 1st Lt. Ted H. Minkinow
Det 1, 1401 MAS
Offut AFB, Nebraska

"Missed Approach Revisited"

by Maj J. M. Jobanek
756 TAS (AFRES)
Andrews AFB, Maryland

"Splish Splash, I Was Taking a Bath"

by Capt Richard A. Barazzotto
355 TAS (AFRES)
Rickenbacker ANG Base, Ohio

"The Quick Turn"

by CMSgt Howard V. Berg
HQ MAC Airlift Control Branch
Scott AFB, Illinois

"It's Never Too Late"

by Col Roy B. Dille
21 AF Safety
McGuire AFB, New Jersey

"On Becoming Old Heads"

by 1st Lt C. W. McCausland
Det 9, 67 ARRS
Zaragoza, Spain

"A Last Encounter"

by Lt Col Arthur Covello (Ret)
Public Affairs Officer
514 MAW (Assoc)
McGuire AFB, New Jersey

"Beware The Devil"

by Capt Paul B. Rich
11 AAS
Scott AFB, Illinois

Twenty-five officers, seven enlisted people, and seven civilians produced 39 entries for the 1982 MAC Flying Safety Writing Contest. Most entrants are already enjoying their C.R. Terror T-shirts and all will begin getting their 1-year personal subscription to the *Flyer* with this issue.

The top three finishers will receive a handsome desk set attesting to their literary abilities. Honorable Mention winners are given engraved wall plaques. A contest-winning story will appear in each issue of *The MAC Flyer* and the 1982 first-place winner starts on Page 4.

Competition was keen with a wide variety of prose and poetry challenging our judges. We appreciate the exceptionally high quality of the manuscripts submitted this year and recognize the hard work that went into them.

by Captain David W. Keith
Curriculum Director, Military Studies Division
U.S. Air Force Academy, Colorado

If we don't waste too much time with gas stops we ought to be able to make Scott before the BX closes." Jim Elliott continued his clipped briefing as he preflighted the single-engine Cessna he'd owned for about 6 months. "We'll head straight east to Omaha, then turn south toward St. Louis." The Air Guard C-130 pilot was really looking forward to this trip. Being one of the few non-active-duty crewmembers picked to attend MAC's "High Flight" program was quite an honor. He'd also been lucky enough to get himself selected for the same session as Bill Robinson, his old buddy from pilot training, who now flew rescue helicopters. Jim got a kick out of razzing Bill about "going astray" and getting into rotary-wings, and Bill was always ready with a quick comeback about Jim "deserting" the active Air Force to become a weekend warrior. But it was the kind of ribbing that only good friends can get away with and each was secure enough to take the joshing in good humor—at least most of the time.

"Well, do you think you're up to copiloting a *real* airplane?" teased Jim, walking around to the nose of his 172. Bill smiled, acknowledging his friend's first verbal thrust. He parried.

"How about the weather for the next couple days?" Bill asked, hoping to catch Jim slightly off guard.

"Denver Flight Service said there was a chance for an early spring snow between Sidney, Nebraska, and Omaha because of a front settling in from Canada. I don't think that will happen, though. And from what I saw on the satellite photo, I just can't see any chance of a major link-up that would cause us too much trouble," Jim concluded, and promptly changed the subject. "Do you think it will blow your mind to fly a machine that doesn't have one of those collective pitch levers?"

Bill repressed an urge to view that question as a challenge to his overall ability as a pilot and answered. "Nope, I think my thousand or so hours hopping around the missile holes throughout the West qualifies me to hold her straight and level most of the time, even without a collective! I'll keep you out of trouble."

"Chopper jocks!" declared Elliot, continuing the tit-for-tat game. "Where'd they ever get the idea they were pilots?" he declared as if talking to himself. Then turning to Bill, "Oh well, at least you'll learn what flying a genuine airplane is like on this trip."

Both men continued the low key banter back and forth throughout the engine start and taxi, and right into the takeoff clearance. An hour and a quick visual approach and fuel stop later, the little Cessna was again winging it's way towards Omaha.

"Sidney, Cessna 0439 Papa, please open the second leg of my stop-over at one-five, estimating Omaha at 1330," radioed Robinson over one of the 172's dual navcoms.

Sidney's reply crackled back, "Roger, 39 Papa. You guys headed very far east?"

"Just as far as Belleville, Illinois, near St. Louis."

"You might want to watch the weather pretty close and think about motel reservations in Omaha. Rapid City just went down to 200 and a quarter and we're seein' a wind shift from 005° to 060°."

First Place, 1982 MAC Flying Safety Writing Contest

"I'm sure we can outrun the crud," replied Bill through the hand-held microphone. "Anyway, we've got some instruments and can always head for KC if necessary. But thanks for the warning. Three-niner Papa out."

"Okay, Jim, looks like a 085° heading will give us the best chance to beat the clouds into Omaha. By the way, you have any other maps in this aerospace vehicle besides these FLIP low altitude charts?"

"That's all I could scrounge," replied Jim. "I tried to scare up some sectionals, but our pubs cupboard was bare. What difference does it make anyway? I've got an IFR Sup in my briefcase, and we're headed VOR to VOR all the way. If worse comes to worst, we can always pick up radar vectors. Just keep triangulating with those navcoms, old buddy. What's our drift these days?"

"As best as I can gather, we're starting to float north of course. How about taking out about 5° correction? Looks like we may be picking up a headwind. And those clouds up north are getting to look grim. Maybe we'd better keep our eyes open for a strip we could retreat to if necessary. Letting down to 500 or a 1,000 feet might not hurt either. Just in case we get smacked with a cloud, unexpected like," surmised Bill.

"There's that chopper paranoia again," prodded Elliott. "Afraid of a few clouds, eh? Even if we do go IMC, it won't last. Besides I know how to handle this little bird in the clouds. But if it'll make you feel better, go ahead and look. Just remember, though, before you get too rattled, both of us are current instrument drivers and this little baby has an ADF and glide slope to back up those navcoms. Don't you think you can hack it flying on the gauges in a 'real' airplane?"

"Sure I can," snapped Bill, sounding a little irritated at his friend's suggestion. "You fixed-wingers think you have a corner on the flying skills market. I can handle the clouds, so just keep trucking, Clyde."

Half an hour later the visibility had dropped to about 3 miles in haze and the wind had shifted to 085°. To make matters worse, a light snow was swirling around the windscreen and a few spots of rime ice were growing under the gear struts.

"I hate to say I warned you, but I warned you," crowed Robinson. "Within the next half hour we're going to be swimming in pea soup. Omaha Radio, Cessna 0439 Papa."

Silence.

"Omaha Radio, Cessna 0439 Papa, come in, please."

More silence.

"Omaha Radio, Omaha Radio, Cessna 39 Papa on 127.7, can you read me?"

Still no answer.

"Cessna 0439 Papa transmitting on 127.7, can anyone read?"

Again, no answer.

"Can't get radar vectors without radio contact," moaned Bill. "Now we're really in deep kimchee. The vis can't be any better than a mile now, no one can hear us, and we're in the middle of Nebraska without a paddle. What I'd give for a sectional right now. There's got to be a field around here somewhere."

"Don't turn chicken on me now, rotorhead," said Elliott. "Since this crud is falling in from the north, we should be able to out run it to the south. I'm going down to 100 feet and slowing back to 80 knots. Keep your eyes open for wires or a road, and maybe we can follow it to a town or a ranch with some kind of strip. We'll set down and wait this out. With any luck we can still make Scott by noon tomorrow."

"Now we're really in deep kimchee!"

As the Cessna buzzed through what had become a pure white sky, both men strained to keep their eyes on the ground, which was rapidly blending into the sky under swirling, heavy, wet snow.

Suddenly, about a mile ahead, a black swath of an asphalt landing strip burned into view.

"The wind tee shows a 10 left crosswind. I'm landing straight-in now!" squeaked Jim through a guarded sigh of relief. "Watch for some sign of a taxiway or hangar so we can get off the runway. Here we go."

The light airplane touched down less than a thousand feet from the approach end. With Jim Elliott gingerly pumping the brakes, it coasted to a stop less than 500 feet from the departure end.

"You see anything on landing, Bill?" inquired Elliott, once the Cessna had come to a full stop.

"Not a thing," replied Bill. "The vis is so low I can't see past the wind tee. But there wasn't a taxiway at the other end. Why don't you creep ahead? There's bound to be one at this end."

The airplane lurched forward. Just before it ran

off the end, Bill caught sight of the taxiway through the snow. Off the runway, he jumped out and walked ahead of the airplane blazing a trail through the snow along the taxiway. Eventually they spotted an old hangar. As Jim shut down the engine Bill jumped back in to get warm.

"Where do you think we are, Bill?" sighed Jim. "I know we're in Nebraska, somewhere between Sidney and Omaha, but that's about all."

"My guess is we're about 90 miles west of Omaha in the middle of nowhere. But in this crud we could be sitting next to the Empire State building and we wouldn't be able to see it. The place looks deserted at any rate. I say we take refuge in that old hangar over there. Maybe the rats and ghosts won't mind our company too much."

As they unstrapped, they were both startled by a tap on the windscreen. "You boys need any help?" asked an old man wrapped only in a brown leather jacket.

Recovering quickly, Bill answered the old man. "Uh, no thanks. We didn't think there was anyone here, the place looks so run-down and deserted. I guessed we're about 90 miles west of Omaha. Where in the blazes are we, anyway?"

The old man's eyes brightened. "Your estimate's not too far off. There's not much in the way of population centers in these parts, but you go due east about 100 miles and you'll run smack dab into Omaha. As for the condition of the place, let's just say it has that lived-in look. Besides, we don't get many visitors, this being a private field and all. You're welcome, though. Why are you fellas flying today, anyway? Even my parakeet walked to work today."

Jim chimed in, "We're on our way to St. Louis and got caught in this sudden storm. We were wandering around trying to find a place to wait it out when we spotted your runway here. It was just like manna from heaven. Thanks for being in the right place, at the right time."

"Well, we aim to please. You guys are lucky you're here and not in a smoking prairie hole. Let's get out of this storm and inside. There's a fire in the stove and we were just fixin' to sit down to a pot of soup when I heard your engine. You're welcome to pull up a stool and join in. There's plenty to go 'round."

Bill and Jim both expressed their appreciation as the three jogged to the door of the old hangar. Inside, the warmth from the wood burning stove penetrated their chill.

Jim sighed, "I didn't realize how cold I was until now. That stove feels great."

"I'll second that," added Bill. "I was convinced the next time I'd feel warm was when I assumed my rightful place in the underworld."

"Let me show you around before we eat. Then make yourself at home," the old man offered. "Call me Will. Out here's the hangar. The convenience facility's out there in back."

The three stepped through the door into the hangar. Sitting there was a perfectly maintained thirties-vintage Lockheed twin. And standing on a

work platform, was an attractive middle-aged woman.

"Who are our visitors, Will?" she asked.

"I didn't catch their names, Emmy. What you boys go by?"

Bill answered. "I'm Bill Robinson and this is Jim Elliott. We're glad to meet you, Will and Emmy. That's a super airplane you've got there."

"Thanks. I try to keep it up," returned Emmy. "We have a few old clunkers around here. We're sorta an old flyer's club; that's what our main business is here. Seems like we attract retired pilots the way Florida attracts bankers. Some of the T-hangars around the field house Jennys, Mitchells, Mustangs, Liberators, Thunderbolts, and Lightnings, and a whole bunch of others. You might say we're sort of a Confederate Air Force Ghost Squadron, northern edition."

"If the weather breaks, I'd appreciate a tour. I

"The clouds are on the ground about 10 miles east of here and their Cessna is going to turn into solid ice in this storm."

have a thing for old airplanes," remarked Bill.

"Well then, young man, you're in luck," gleamed Will. We're having a club meeting here tonight at 7 P.M. You're certainly welcome to sit-in. My brother's the club president this year. He'd surely be glad to meet you. For that matter, so'd everyone else. We've got about 100 members, most of 'em combat vets, but we always welcome younger aviators."

Jim replied, "We'd love to stay, but we do need to get to St. Louis as soon as possible. Just as soon as the weather breaks we need to hit the road. But we'll stay 'til then, if you don't mind."

"Sure, son. But don't be too anxious. These prairie storms can be mighty tricky. How about some lunch Emmy?"

The four crowded around a work bench in the hangar and dove into the steaming soup pot. As they ate, Bill kept one eye on the hangar window. Slowly, the sky began to brighten.

"Well, Will," remarked Jim, "it looks like the storm is lifting enough for us to get at least as far as Omaha. We'd best get cracking before it comes back in. Thanks for the hospitality. You too, Emmy. It's been real nice to meet you."

"I don't know, Jim," Bill challenged. "Those clouds still look pretty threatening, and I'd sure like to meet some of these old pilots. Who knows, we might even learn a thing or two about cruisin' the friendly skies?"

"Look, Bill, how's it going to look when we don't show up for a program designed for front runners. That'll be the same as admitting we didn't deserve the honor of being picked to begin with," lectured Jim.

"I guess you're right," conceded Bill. "Seems a shame though. But I guess getting there takes precedence."

"Look, fellas, it's none of my business, but I wouldn't try to fly in this weather. But, if you guys feel you'd best get going, Emmy and I won't try to stop you. I do wish you could stay for our meeting though. It'll be a good time and we got some of the best war-story tellers and hand flyers you've ever heard."

"Thanks for the offer, Will, but Bill and I had best get going while there's a break in the weather. Again, we appreciate the hospitality."

Despite the 1,000-foot ceiling and the light snow, Jim and Bill gingerly coaxed the Cessna down the runway and into the air, then headed away from the setting sun towards where they thought they'd bump into Omaha's radar vectors.

Emmy turned away from the window with a tear in her eye and looked at Will. "Tell me something Wilbur. Why hasn't our passing had any effect on these young sticks? If those guys had hung around for a few hours, Orville would have been here with Wiley and Dick Bong. They really could have picked up a few things about flying. These youngsters think us old heads can't teach them anything."

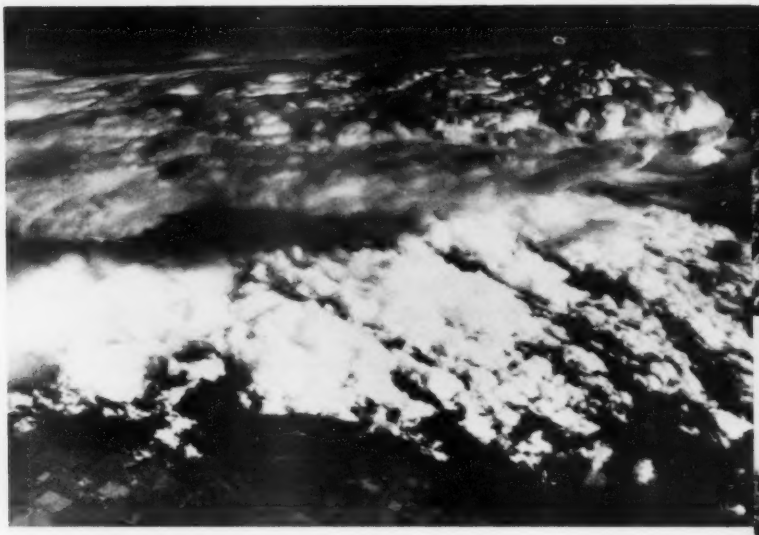
"I know, Amelia. But then I guess we never listened to 'conventional' wisdom in our day either. Too bad though. The clouds are on the ground about 10 miles east of here and their Cessna's going to turn to solid ice in this storm. And we can only move the field to save young fools once a day by the terms of our 'contract.' I guess we can set a couple more places for supper. It looks like Jim and Bill will be with us for our meeting after all." ★

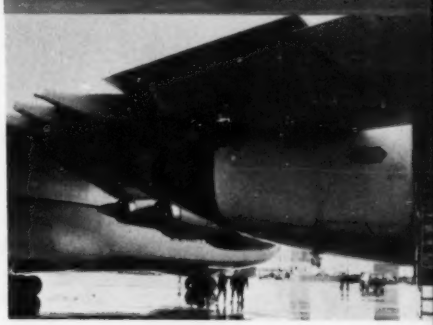
ABOUT THE AUTHOR

Captain David W. Keith is a 1971 graduate of the Air Force Academy. He spent his first two years of active duty as a Security Police Operations Officer before going to helicopter pilot training. After a tour in HH-53s at NKP Royal Thai Air Base, he returned to fly H-1Fs with the 40th ARRS. Captain Keith earned a masters degree in systems management from USC in 1978, is a distinguished graduate of both Squadron Officers School and undergraduate helicopter pilot training, and he's also a previous honorable mention winner of the MAC Flying Safety Writing Contest.

Anyway you spell it, thunderstorms are . . .

Trouble with a





Remember the quick-witted huckster from the Broadway play, "The Music Man?" He warned the good people of River City that they had trouble with a capital "T" that rhymed with "P" which stood for pool. His scare tactics and sterling salesmanship convinced the townsfolk they should interest their kids in forming a town band to keep them occupied and out of the pool halls and certain ruination. Well, this summer, like every summer, we in MAC have trouble with a capital "T" and that, my fellow aviators, stands for "Thunderstorms."

Yes, thunderstorms, alias CB's, thunderbumpers, thunderheads, thundershowers, frog stranglers, gully washers. Whatever you call them, these malevolent meteorological misfits have been the ruin of many an aviator, both young and old. These "hazards to your health" have, over the years, torn the studiest aircraft asunder as if they were made of defective balsa wood. They have overturned aircraft on the ground with their first gusts; they have pounded numerous aerospace vehicles with rock-hard hail. They have fired their bolts of instant destruction at unsuspecting (or unwary) planes as if they had a personal vendetta against every soul aboard. Other thunderstorms have literally drowned jet engines in mid-air and caused their airplanes to crash into a million pieces.

The worst thunderstorms have lowered that dark, dreaded, rushing, whirling funnel foot of terror, stamping and destroying everything in its path, leaving ruin and heart-rending sorrow in its wake. In other words, my

Capital "T"

Photos courtesy National Severe Storms Laboratory; and SSgt Andrew W. Flood, HQ MAC/Airlift Communications Division

friends, we've got trouble right here this summer, and whether you're flying over River City or Kansas City, it's trouble with a capital "T"—and you know what that stands for, right?

Here are some general guidelines to use as you make your way through the summer skies. Check your aircraft's Dash One and MACR 55-series for detailed instructions.

- Plan all flights to avoid areas of forecast or known severe weather.
- Avoid thunderstorms and cumulonimbus clouds. During climbout, enroute and descent, avoid by 10NM when you're below FL 230, and 20NM at FL 230 and above.
- Do not fly directly above a thunderstorm unless you can top it by 2,000 feet.
- Avoid the rain shaft and cloud base of storms by 10 miles. During takeoff or landing avoid any thunderstorm or cumulonimbus cloud and beware of its associated gust front. The distance from the storm must be increased as soon after takeoff as possible to meet climbout separation criteria. When landing, a missed approach course must be available which will provide separation similar to that for departure.

And if this article hasn't fully convinced you to avoid thunderstorms, here are some facts that ought to make even C. R. Terror sit up and take notice.

- A thunderstorm's downdraft velocity associated with the downburst may exceed 2,400 feet-per-minute.
- Updrafts may exceed 6,000 feet-per-minute.
- Hail can occur in clear air within 10 miles of the storm and is most frequently encountered between 10,000 and 30,000 feet, although it has been found up to 45,000 feet.
- Severe turbulence can occur at all altitudes in a storm.
- Icing usually occurs from 0°C to -20° C.
- Most frequent encounters with icing and lightning occur within 5,000 feet of freezing level.
- 95% of lightning strikes are below 20,000 feet and within 8° C of the freezing level.
- Gust fronts of high velocity cold air may preceed the main downburst and the storm itself by 10 to 15 miles.
- Rate of storm's vertical growth may exceed aircraft's climb capability.
- Intensity of rain can cause hydroplaning on wet runways.

A precision glidepath was never meant for . . .

Ducking Under

A few years ago, eleven of Boeing's most experienced instructor pilots crashed in the same day. Though the average flight time logged by these experienced captains was over 10,000 hours, each landed short of the runway. Nobody was hurt though, because the crashes took place in a simulator. Actually the pilots were part of an experiment conducted to determine the reason four perfectly good Boeing 727s had crashed in rapid succession during landings at Tokyo, Cincinnati, Salt Lake City, and Chicago. For the experiment, a model of a lighted city was constructed which was visible from the simulator windows. Each pilot was then instructed to perform a visual approach using all available instruments *except* the altimeter.

In effect, this experiment simulated what happens when the pilot leaves the instruments and "goes visual" for landing. It's a good thing it was just a simulator because eleven of the twelve pilots in the simulator experiment landed short. (One guy made it safely. He was a former Navy carrier pilot.) Each pilot was somewaht upset by his less-than-spectacular performance because this should have been the proverbial "piece of cake" maneuver. It wasn't. Why would eleven highly experienced pilots duck under the proper glide path and land short? The study concluded that perhaps there was more to the duck-under problem than simple pilot error. The pilots in the experiment were actually being asked to solve a problem which exceeded normal visual ability.

Given the proper set of circumstances, any pilot will duck under, regardless of experience level or eyesight. Usually the pilot believes that a perfect glide path is being maintained. Why don't pilots recognize a duck under? To find out, let's discuss some visual phenomena which serve to deceive even the most proficient pilot. Assume we are shooting a straight-in approach from approximately 12 miles.

Though the line of sight is a straight line, it's possible for the actual flight path of the aircraft to follow the arc of a circle whose circumference hits the ground short of the airport. As the aircraft arcs below the glide path, the pilot shifts his or her aim point up in the windshield and maintains line-of-sight with the touchdown target. The pilot assumes that a precise glide path is being flown, yet the aircraft is actually arcing toward a touch-

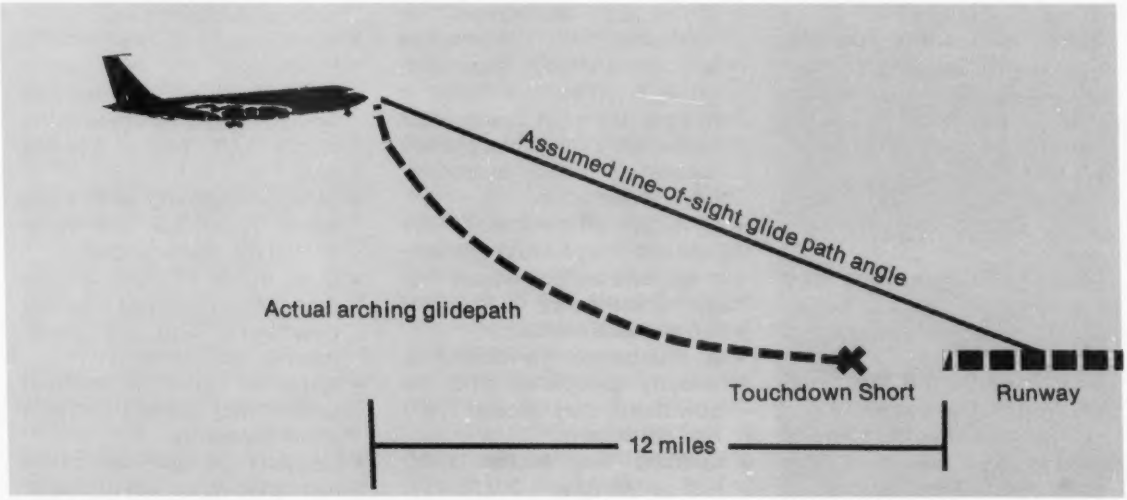


Figure 1 Assumed approach path from 12 miles out.

down point short of the runway.

Our eyes are especially deceived at night, but a number of other factors can also contribute to a duck under. Beware of approaches over dark water, or land where there are no lights below or to the side of the aircraft. It is impossible to visually judge your height above the terrain. Sloping or irregular terrain surrounding the airport, or an extremely wide or narrow runway also present sensory illusions. Subconsciously, the glide path will be adjusted to reproduce the visual approach picture you're used to seeing (i.e., the "home drome" syndrome).

When smoke, fog, haze or another obscuring factor reduces the brightness of the lights below, it can create an illusion that the airplane is too high. This can cause you to prematurely lower the glide path angle or visually change your aim point. There are many circumstances which can create visual illusions and cause you to duck under, but let's discuss what happens to the airplane when the pilot ducks under.

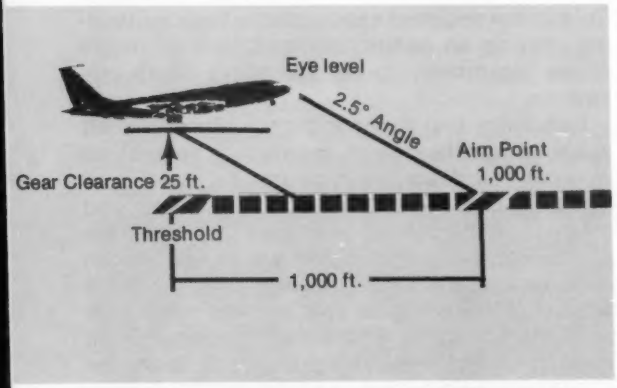


Figure 2 Approach path with normal 2.5° approach angle and 1,000 foot target visual aim point.

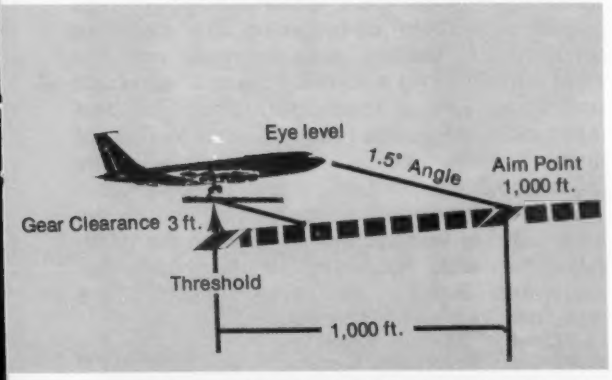


Figure 3 Approach path with 1.5° approach angle and 1,000 foot target visual aim point.

Consider a C-135 flying a normal 2.5° glide path. Remember the main landing gear is about 65 feet behind and 14 feet below the pilot. If the pilot maintains a precise 2.5° glide path, the main landing gear will cross the runway threshold at approximately 25 feet above the runway, assuming no flare. Using the standard 1,000 foot visual aiming point, there is surprisingly little room for error.

Next, let's suppose there is a smoke, dust or fog layer which is lying low across the touchdown zone of the runway. The pilot maintains the 2.5° glide path, but changes the visual aim point from 1,000 feet down the runway to only 500 feet from the approach end. The airplane will touch down short of the runway.

Now let's add some illusions and consider the possible effects. Suppose the pilot shoots an approach to a runway with a 1° upslope. Believing that the airplane is too high, the pilot unintentionally ducks under and changes the glide path to a flatter 1.5°. At this shallow dragged-in

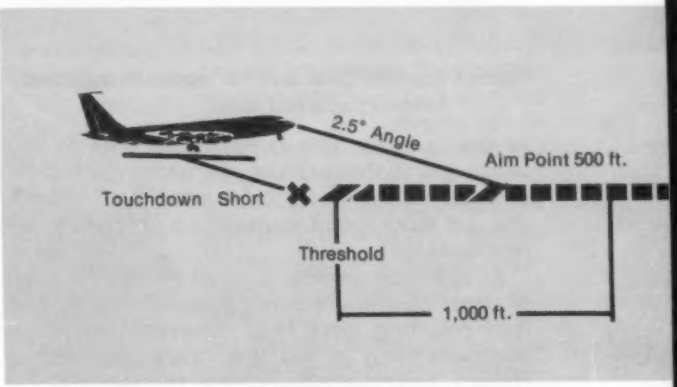


Figure 4 Approach path with 2.5° approach angle and 500 foot aim point.

approach angle, the landing gear will cross the threshold at approximately 3 feet.

Finally, let's discuss the most dangerous case. Suppose a pilot is shooting a night precision approach in the rain. Let's assume he or she disregards the instruments at minimums and ducks under to get below a ragged ceiling. Let's further assume that the pilot also changes the visual aiming point close to the end of the runway in a misguided attempt to provide additional stopping distance. The pilot has committed two

sins. The first was changing the glide path to 1.5° and the second was changing the aim point to 500 feet. In this case, the landing gear will try to touch down 10 feet below the runway at the threshold.

If you are on course and glide path when you break out at minimums, don't radically change anything. Yanking power off and diving at the runway in order to establish what you think is a "normal" approach creates a high sink rate close

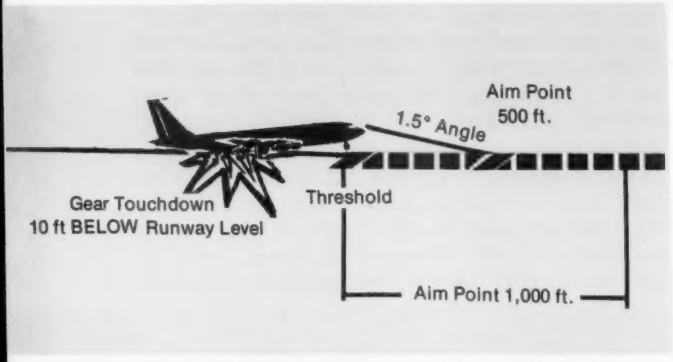


Figure 5 Approach path with 1.5° approach angle and 500 foot visual aim point.

to the ground. This is hazardous both to your health and to the health of your passengers. If you level off from a duck under using just elevator, you will quickly find yourself in a poor thrust/life relationship.

At approach speeds, a small increase in angle of attack causes a relatively large increase in drag, thus requiring more than normal thrust. If the throttle setting is too low, there may not be enough engine spool-up time to stop the sink rate. The flatter the approach angle, the more difficult it is to visually detect any rate of change. Therefore, the pilot flying a dragged-in approach may not realize his aircraft's sink rate is greater than his means to stop it. If you add a sudden wind shear, the situation quickly becomes hopeless.

How do we prevent duck-under maneuvers? First, admit to yourself that your eyes can lie to you, and that your "normal" approach may not be normal at all. There are just too many visual illusions out there waiting to deceive your eyes.

Secondly, don't give up vertical guidance (i.e., ILS glide slopes, PAR glide slopes or VASIs). Have your copilot crosscheck the glide slope while you are visual. Once you go full scale below the glide path or red over red on the VASIs, it's impossible to tell exactly how far below the proper glide path you really are.

Remember your altimeter. If your approach chart has published check points, use them. Monitor your descent rate. For a 2.5°to 3° glide path, the rate of descent should be approximately 700 feet-per-minute. If your VVI is appreciably more than that, it should tell you something. You either have a very strong tailwind requiring a high rate of descent to maintain the glide path angle, or a duck under.

Your radar altimeter can also be used to help determine your absolute altitude after you go below the DH/MDA. One technique is tohave the pilot not flying the approach call off the radar altimeter readings at 100 feet, 50 feet and 20 feet. This is not designed as an order to flare for landing, but as an additional crosscheck for height above the runway to aid the pilot's depth perception.

Remember that the performance of your aircraft at any one instant on an approach is determined by what you did a few moments before. If your approach is stable and you're on glide path and are maintaining charted airspeed with the airplane trimmed properly, nothing drastic should happen when you look outside at minimums. At some airports, the PAR glide path and the VASI glide path may not agree, so don't let it tempt you into ducking under. If you're fighting to stabilize the approach, take it around.

The last 200 to 300 feet of any approach demands the most in professional discipline. The safest approach, considering the stopping distance and landing gear clearance over the threshold, is along a normal 2.5° to 3° approach path using a visual touchdown target 1,000 feet down the runway. The possible consequences of ducking under below those parameters are devastating.

The next time you find yourself well below the glide path, or you see red over red on the VASI, remember what happened to the highly experienced Boeing IPs. They crashed the simulator. You may not be so lucky.

—Flight Safety Focus

FLYERS ANONYMOUS

When You Gotta Go. . .

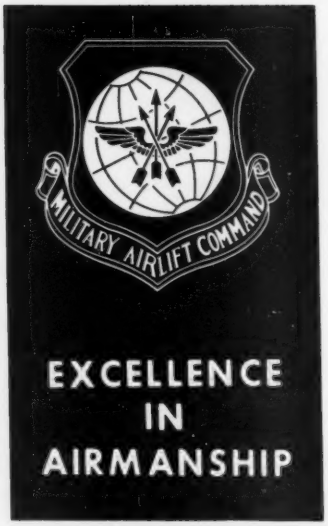
Occassionally Aviation Safety Reporting System (ASRS) reports deal with occurrences arising during the absence from the flight deck of the pilot-in-command. In this particular report, the reason for the captain's absence was described as one of "physiological need." The copilot left flying the aircraft was notified by ATC that he had deviated from his cleared route (an amended clearance a short time before had changed the flight-planned route). In an effort to return to the proper track the copilot commenced a turn, unfortunately too shallow to avert penetration of a restricted area which was hot at the time. In his report to us, the copilot declared he didn't wish to turn more steeply because of the high altitude. Our cynical analyst—possibly recalling his own younger days—suggested that the reason for the gentle maneuver may have been related to a faint hope that he could get back on course without the deviation coming to the attention of the absent captain.

Another story—captain again not in the left front seat—described an emergency (multiple engine trouble) which required the full attention of the remaining two crewmembers. In fact, they were *extremely* busy in attempts to diagnose and correct their problem, fly the aircraft, and notify ATC of the necessary deviation from clearance. The returning captain, quickly getting the picture, slipped into his seat, announced, "I have the airplane," and proceeded to attend to the flying, leaving the other crewmembers free to cope with the problem. In contrast with some unfortunate incidents in the past in which all crewmembers concentrated on an emergency while the airplane, not carefully attended, flew into trouble, good cockpit management, in this case, made possible complete recovery and safe completion of the flight.

There may be a couple of lessons here:

- During temporary short-staffing of the flight deck crew, extra vigilance is required on the part of the remaining occupants.
- In an emergency situation the "store" must still be minded. Strict attention to standard procedures and cockpit discipline are essential. That's what the "crew concept" is all about.

Courtesy NASA ASRS *CALLBACK*

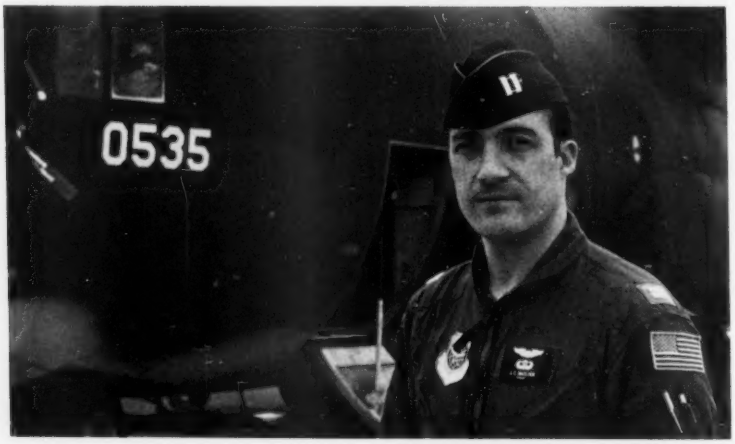


Captain Jimmy Matlock, 16th TATS. While on a C-130 initial qualification pilot training sortie at Little Rock AFB, Arkansas, Captain Matlock's student was flying a holding pattern at Toneyville NDB at 5,000 feet. Suddenly the number 4 engine lost 4,000 inch-pounds of torque with corresponding drops in fuel flow and TIT.

Assuming a problem existed with the throttle linkage, Captain Matlock took control of the aircraft. Without moving the throttle, he directed the engineer to place the "TD" switch in the null position. The condition of low torque was initially corrected, but then the fuel flow, TIT, torque and RPM began fluctuating erratically. Captain Matlock directed the engine shutdown procedure for number 4 engine.

Engine shutdown was normal, and Captain Matlock requested an emergency approach to Little Rock AFB. After completing the emergency engine shutdown checklist and leveling at 3,000 feet, the crew noticed that number 2 propeller now was fluctuating in excess of 2 percent RPM. Selecting mechanical governing and following the re-indexing procedures had no effect leaving little choice but to shut number 2 down as well.

Captain Matlock then flew a flawless no-flap approach, selecting 50 percent flaps for an uneventful landing. Captain Matlock's professional competence, superior flying skills, and decisive actions successfully surmounted a serious, two engine-out inflight emergency.



Captain Donald Wurster, 1550th ATTW, was on a daytime training mission, demonstrating water operations in a CH-3E near Kirtland AFB. Suddenly, at 300 feet above a reservoir and at

70 knots airspeed, the aircraft yawed sharply to the left, followed immediately by a rapid decay in rotor speed. Suspecting engine problems, Captain Wurster instantly began the single-engine emergency checklist and turned the big helicopter toward the shoreline. As he approached the beach, his crew confirmed his original suspicion. Because of high gross weight and high density altitude, Captain Wurster was barely able to keep the CH-3E in the air, even with maximum power on the remaining engine. (The CH-3E doesn't have the capability to jettison its external fuel tanks or dump fuel.)

Quickly analyzing the situation, Captain Wurster realized his only chance to land the "Jolly Green" safely was to make a running landing. A hover landing was out of the question due to the marginal single-engine hover ability and the high gross weight. His next dilemma was where to land the crippled aircraft. The narrow, sloping sandy beach was out of the question. And the terrain beyond the beach was even more unsuitable—it was both hilly and covered with large rocks and desert brush. His only hope was to nurse the CH-3 to an airport just 5 miles away.

Captain Wurster flew the CH-3E toward the Truth or Consequences airport, but along the way the ground clearance of the aircraft had decreased to only 100 feet. This was due to the slowly rising terrain and the fact the "Jolly Green Giant" at this point had almost no climb capability. As Captain Wurster spotted the airport, he also saw a high tension line between his aircraft and the airport. Unable to clear the power line, he turned the aircraft into the wind to parallel the wires. Then, by applying slight aft cyclic control, he managed to ease the helicopter up enough to safely cross the power line. Captain Wurster then entered a 100-foot downwind, completed the final turn at 50 feet, and made a running landing with minimum power. Captain Wurster's skillful recovery of his partially disabled aircraft under very adverse conditions forcefully displayed "excellence in airmanship."

Technical Sergeant Edward Ragsdale,1551st FTS, was flying as a flight engineer on a search and rescue mission looking for the survivors of a civilian helicopter crash in Colorado. The HH-53 crew sighted the crash site in the high mountains of Southern Colorado on a snow-covered slope. Pararescuemen from the helicopter were lowered into a small clearing about 100 yards from the site and made their way to the wreckage where they began to prepare the survivors for pickup. The first

survivor and one of the PJs were brought back on board the "Super Jolly" with no trouble. Sergeant Ragsdale then began to recover one of the injured crash victims in a Stokes litter. All was normal until the litter came to within 10 feet of the '53. Suddenly, the hoist support structure collapsed causing the hoist assembly to rip from the side of the rescue chopper. Only two steel hydraulic lines kept the hoist assembly from plunging to the ground. A third hydraulic line broke and began spraying hydraulic fluid over the entire aircraft, coming close to the engine inlets. As the structure collapsed, Sergeant Ragsdale's hand was crushed.

Although in intense pain, Sergeant Ragsdale directed Technical Sergeant Dale Malugani, the first PJ to be recovered, to give him a tie-down strap. Sergeant Ragsdale quickly used the strap to secure the hoist assembly to a gun mount inside the aircraft. This technique kept the hoist from breaking away entirely which would have meant certain death to the injured victim. Concerned with retrieving the survivor immediately, Sergeant Ragsdale and the PJ attempted to pull the litter into the aircraft. The lowered and distorted position of the hoist prevented this, however. Since there was no electrical power to the hoist, and since the tall trees prevented a landing, the engineer realized his only hope of preventing any further injury to the survivor was to lower him to the ground using the emergency hydraulic control. Once Sergeant Ragsdale had accomplished this, he sheared the hoist cable. Leaving a PJ with the injured survivor, the HH-53 pilot made an emergency landing at Stevens Field, Pagosa Springs, Colorado and Sergeant Ragsdale was rushed to a hospital.

Even though in extreme pain from his injuries, Sergeant Ragsdale's efforts in this life-threatening situation are worthy of the highest praise, and truly demonstrated "excellence in airmanship."

The MA

ROLL C

MAC UNIT ACCIDENT-FREE FLYING-HOUR MILESTONE AWARD

700,000 HOURS OR MORE

76 MAS

500,000 HOURS

14 MAS

450,000 HOURS

41 MAS
75 MAS

400,000 HOURS

3 MAS
6 MAS

350,000 HOURS

1 MAS
4 MAS

300,000 HOURS

58 MAS
86 MAS
137 TAW (ANG)

250,000 HOURS

57 MAS
375 AAW

200,000 HOURS

53 MAS
433 TAW (AFRES)
446 MAW (Assoc)

160,000 HOURS

9 MAS

150,000 HOURS

16 TATS
136 TAW (ANG)
403 RWRW (AFRES)
704 TAS (AFRES)

120,000 HOURS

64 TAS (AFRES)

100,000 HOURS

1 HS
36 TAS
55 WRS
60 MAW
97 MAS
156 TAS (ANG)
183 TAS (ANG)
185 TAS (ANG)
303 TAS (AFRES)
313 TAS (AFRES)
315 MAW (Assoc)
327 TAS (AFRES)
443 MAW
445 MAW (Assoc)
1400 MAS
1401 MAS
1402 MAS

OF HONOR

MAC UNIT ACCIDENT-FREE FLYING YEAR MILESTONE AWARD

As of 31 December 1981

30 YEARS OR MORE

1 MAS
64 TAS (AFRES)
303 TAS (AFRES)
327 TAS (AFRES)

25 THROUGH 29 YEARS

14 MAS
76 MAS
96 TAS (AFRES)
183 TAS (ANG)
312 MAS (Assoc)
704 TAS (AFRES)

20 THROUGH 24 YEARS

1 HS
3 MAS
6 MAS
Det 11, 39 ARRW
Det 5, 40 ARRS
Det 18, 40 ARRS
57 MAS
97 MAS (Assoc)
137 TAW (ANG)
156 TAS (ANG)
167 TAS (ANG)
180 TAS (ANG)
185 TAS (ANG)
301 ARRS (AFRES)
303 ARRS (AFRES)
305 ARRS (AFRES)
313 MAS (Assoc)
328 TAS (AFRES)
731 TAS (AFRES)

10 THROUGH 19 YEARS

4 MAS
9 MAS
11 AAS
16 TATS
36 TAS
Det 5, 39 ARRW
Det 15, 39 ARRW
Det 1, 40 ARRS
Det 6, 40 ARRS
Det 22, 40 ARRS
41 MAS
53 MAS
53 WRS
54 WRS
55 ARRS
55 WRS
58 MAS
Det 9, 67 ARRS
68 TAS (AFRES)
71 ARRS
73 AAS (Assoc)
75 MAS
86 MAS
94 TAW (AFRES)
95 TAS (AFRES)
130 TAS (ANG)
135 TAS (ANG)
136 TAW (ANG)
139 TAS (ANG)
142 TAS (ANG)
143 TAS (ANG)
144 TAS (ANG)
158 TAS (ANG)
164 TAS (ANG)
181 TAS (ANG)
300 MAS)Assoc)
301 MAS (Assoc)
315 MAW (Assoc)
326 MAS (Assoc)
335 MAS (Assoc)
337 TAS (AFRES)
356 TAS (AFRES)
357 TAS (AFRES)
403 RWRW (AFRES)
445 MAW (Assoc)
446 MAW (Assoc)
459 TAW (AFRES)
700 TAS (AFRES)
701 MAS (Assoc)
728 MAS (Assoc)
729 MAS (Assoc)
730 MAS (Assoc)
732 MAS (Assoc)
756 TAS (AFRES)
758 TAS (AFRES)
932 AAG (Assoc)

Mishap with a Moral

Deadly Omission

Why did this Falcon 10 fail to accelerate normally?

The January air chilled the crew as the French-built Dassault Falcon 10 departed Battle Creek, Michigan, for Meigs Field, Chicago. An hour and 15 minutes later, the Falcon 10 landed with no discrepancies or malfunctions to report. Arrangements were made between the flight crew and their passengers (some high-ranking corporate executives) for the return flight to Battle Creek later that afternoon. The agreed-upon takeoff time was 1500.

About 1400, both pilots went to the twin-engined jet to clear some light powdered snow from the wings. They had to use deicing fluid to remove a small ridge of slush which had accumulated at the rear of the leading-edge flap and on the horizontal stabilizer. No other ice accumulations were observed. About 20 minutes later, however, the business executives phoned the pilots to let them know they would be late. Finally, about 1530, the four passengers and the pilot who was to act as pilot-in-command on the return flight, boarded the plane. The pilot, designated as copilot, then cleared a small amount of snow from the wings, and he too boarded the Falcon.

Engine start and pre-taxi checks went smoothly enough. After tower cleared the Dassault twin-jet to taxi, the pilot released the parking brake and began to taxi to the active runway. Although the pilot taxiing the plane had to stop several times enroute to the runway, at no time did he recall using the parking brake to either stop the plane or hold the plane while stopped. Several minutes later, tower cleared the Falcon onto the active runway to hold. Again, the pilot recalled using only the brake pedals to stop and hold the plane.

During this time, the captain reviewed the takeoff speeds: V1 (takeoff decision speed)—100 knots; VR (rotation speed)—107 knots; and V2 (min takeoff safety speed)—108 knots. Both pilots agreed if anything happened after the aircraft attained V1, the takeoff would continue. Tower then cleared the Falcon for ". . .takeoff, wind 120 at 7."

Running up power to 60 percent, the left-seater checked the other instruments, placed the throttles "full forward" and released the brakes. In his own words:

". . .everything went normally. . . accelerated nicely up to V1, and at V1 it would not—it just stopped accelerating—and we were hanging between V1 and VR. . .and from that point, after it hit V1, the aircraft didn't accelerate." After what the pilot thought was a couple of seconds, he decided that " . . . we have to go. And you could tell right then it was going to be very, very close . . . and the airspeed indicator just crept up to V2. We had about 500 feet of runway left." The highest speed the pilot could recall was 107 knots.

Now with the Falcon rapidly running out of runway, the pilot pulled the nose of the aircraft up. And as it came up

sluggishly, the airspeed actually started to decrease slightly. In the words of the captain, "By that time, we just skidded—we were right off the end of the runway. I know the nose was up when we went off the end of the runway but then immediately came down, and we went nose first into the water." Less than 1 minute after brake release, the Falcon ran off the south end of runway 18 and into Lake Michigan coming to rest in 25 feet of icy water, 300 feet from the departure end of the runway. As soon as the Falcon came to rest, the crew and passengers began an immediate and orderly evacuation. The lower nose of the jet was partially crushed from the impact and the copilot died almost immediately from impact trauma. The other pilot, however, was able to escape as did all the passengers. A Chicago Fire Department helicopter responded to the crash alarm and was over the site within 3 minutes. Three passengers and the surviving pilot were picked up by the rescue helicopter. A fourth passenger was seen struggling and a fire department captain jumped into the water to assist him. The fireman was unable to reach the passenger in time, and the man died.

Analysis

NTSB investigators focused their inquiry on why the Falcon 10 had failed to accelerate normally from V1 to VR. Examination of the powerplants showed they were capable of developing the power required to accelerate the twin-jet normally, and interviews with the passengers and the pilot confirmed this—the engines were doing their job. Investigators then began to focus on other drag-producing devices—brakes, flaps, etc.

As the investigation progressed, detailed analysis of the brake pads indicated some force had acted on the brakes without the knowledge of the pilots. After a metallurgical examination, the brake pads taken from the aircraft showed they were of a structure and hardness which could only have been achieved if the pads had been heated to about 1,600° F and then cooled by a rapid quenching process. This condition would not have occurred under normal circumstances. Investigators theorized, however, that if the parking brake was set and was not released prior to takeoff roll, the series of events leading to the aircraft's deadly plunge into Lake Michigan may well have been set in motion.

" . . . everything went normally . . . and at V1 it just stopped accelerating . . ."

Some months after the accident, the nose section containing the parking brake components was recovered. An analysis of these components showed they were still operable, even after being submerged in the icy waters of the lake.

The extensive analysis produced strong evidence concerning brake lever position during the takeoff roll. Identations on the parking position tooth and its corresponding lock finger were identical in shape and size. Investigators concluded that it was highly unlikely these identations could have resulted in normal operation of the brake lever in the "park" position. The type of damage uncovered would have had to occur as the result of a large force applied to this mechanism, causing the parking brake lever to separate while it was engaged in its locked position. Therefore, investigators concluded that the Falcon flight crew started the takeoff roll with the parking brake still set. Subsequent taxi tests of a Falcon 10 by the NTSB showed that the plane could be easily taxied with the parking brake set. As the heat built up on the pads they would expand, producing more drag, particularly as the aircraft reached higher speeds, and the drag on the heated brakes, the board concluded, would have had a significant adverse effect on aircraft acceleration.

But there was one other contributing factor to this tragic mishap. When the company which operated the Falcon 10 had prepared its own flight crew checklist, several omissions were made from the manufacturer's suggested checklist. The specific differences refer to the brakes on the "Leaving the Parking Area" checklist, and the section marked "Taxi Check." Four of the items on the manufacturer's suggested checklist refer specifically to brakes and one in particular calls for "brake light. . . out," prior to takeoff on the pretakeoff check. In the company-produced checklist, flight crews were not specifically ordered to call for a final "brake light. . .out" check before application of power for takeoff. The NTSB believes that if these items had been included on the company's checklist, the crew probably would have detected and released the parking brake before the takeoff roll began and, consequently, this fatal accident might have been averted.

—Adapted from NTSB-AAR-81-6

DROP AT DAWN

Gallant Eagle 82 -- a "Total Force" effort

by Capt Gale E. Clouse, Jr.
Associate Editor

"Honk 11 flight, taxi to runway 01." Major Eric Johnson, gave the order over interplane frequency as Lieutenant Colonel Jerry McKimmey, serial lead for section I of our 12-ship formation, advanced the throttles on the C-141 lead ship. Our formation taxi at Dover AFB, Delaware had begun and 12 Starlifters from the 62d Military Airlift Wing, McChord AFB, Washington were on their way to Gold drop zone (DZ), located at the Fort Irwin National Training Center, California. We would be dropping heavy equipment from the Army's crack 82d Airborne Division. Our formation was an integral part of 60 C-141s and 30 C-130s making a brigade-sized drop at dawn on 30 March 1982, in support of exercise Gallant Eagle 82, a JCS-coordinated, US-REDCOM-sponsored, exercise of the Rapid Deployment Joint Task Force.

Along with 32 other MAC Starlifter crews, the 12 Starlifter crews from McChord AFB had flown into Pope AFB, North Carolina during the previous weekend to pick up their heavy equipment airdrop platforms. Indeed, Pope had been the scene of intense airlift activity on the 2 days preceeding the

TOP CENTER—Palletized jeeps and a Gamma Goat truck-trailer are loaded on a 62d MAW C-141 at Pope.
Photo by Frederick A. Johnsen, 62d MAW Historian.

ABOVE RIGHT—General James R. Allen, CINCMAC, observes a C-141 loading at Pope during Gallant Eagle.
Photo by Frederick A. Johnsen.

BOTTOM LEFT—Third MAPS crews onload a C-141 during Gallant Eagle. The 3rd MAPS crews loaded 44 aircraft in one 24-hour period, averaging 25 minutes per aircraft.
U.S. Air Force photo.

BOTTOM RIGHT—Major Greg Leppert (center) briefs his crew prior to their "o'dark thirty" takeoff for Gallant Eagle.
Photo by Frederick A. Johnsen.

massive airdrop as C-141 aircraft flowed into the base at 20-minute intervals, picked up their equipment, and proceeded to East Coast "bed-down" bases. Each of the 44 heavy equipment aircraft was scheduled for a 3 hour and 15 minute ground time at Pope to pick up their load. The 3d Mobile Aerial Port Squadron (MAPS), augmented by 53 reservists, performed the gigantic task of loading these 44 heavy equipment aircraft, as well as 16 other C-141s carrying personnel for the drop. In all, Pope loaded 110 aerial platforms ranging in length from 8 to 24 feet. For such a wide-ranging operation, the 3d MAPS did a superb job.

On 28 March there were an average of three C-141s on the ground, at any one time, being loaded. Each Starlifter spent an average of only 30-45 minutes on the ground, thanks to the hard working, safety-conscious loading crews. The 317th TAW safety staff also monitored ramp operations at Pope to assure that things went just as safely as possible. Aside from some ramp congestion caused by numerous vehicles involved in the loading operation, it was a nearly perfect loading operation.

After picking up their platforms, 10 McGuire and 2 Altus C-141s proceeded to McGuire AFB as part of the "beddown." The 20 Charleston Starlifters returned to home station and the 16 Norton aircraft carrying personnel remained at Pope. These 60 aircraft including 12 from McChord who launched out of Dover, were scheduled to depart their respective RON locations at approximately 0200 local on 30 March 1982 to assault three DZs 20 minutes after a C-130 drop. Using both a northern and a southern route, the Gallant Eagle C-141s converged on the drop zone. Prior to making the actual drop at Fort Irwin, the C-141s entered three orbit areas along the Colorado River.

The 30 C-130s scheduled for the airdrop had deployed to March AFB, California. Their mission was to simultaneously assault Rock and Stone DZs with 16 heavy equipment and 12 personnel aircraft. In addition, two LAPES C-130 aircraft were to assault Nelson extraction zone at 0800 local and 0801 local, 2 hours after the beginning of the C-141 drops. C-130 units participating in the drop included the 314th TAW at Little Rock AFB, the 317th TAW at Pope AFB, the 463d TAW from Dyess AFB, the 459th TAW (AFRES) from Andrews AFB, and the 137th TAW (ANG) from Oklahoma City.

Aerospace Rescue and Recovery Service WC-130s from Keesler AFB flew weather recon tracks in the orbit and Fort Irwin areas prior to the launch and provided special reports on the day of the drop. Had the weather and winds for the drop zones been out of limits, a 24-hour weather delay would have been called.

Our 12-ship formation had been divided into two flights of six aircraft, and parked to allow an expeditious and safe ground operation. I was flying in the second flight with deputy lead, Major Greg Leppert, of the 4th MAS out of McChord. At 0154 local it was our turn to taxi as we sequentially left our parking rows in formation order. One of the C-141 aircraft aborted on the ground, but a spare aircraft was ready and waiting. Hard work by several loadmasters and timely action by the 436th MAW had the original crew in their "new"

'lifter and back in the formation in time for the takeoff. From crew buses to crew lunches to aircraft refueling, the Dover people cheerfully and professionally supported the Gallant Eagle launch in the best tradition of the Eagle Wing. One master navigator who had been around the "system" said that it was the best ground support he had seen in 24 years of flying. Takeoff intervals for the 12 C-141s were 30 seconds apart and Major Leppert began his takeoff roll precisely on time at 0210:30 local. We were initially cleared to climb to the block altitude of FL 310 to FL 350.

After the beginning of cruise flight we were stacked up at 500-foot altitude intervals beginning at 32,500 feet and in trail formation at 1½ miles between aircraft. The major problem during the cruise portion of our flight was the "accordion" effect in which the ground speeds of formation aircraft varied as much as 45 knots due to differences in wind velocity at different altitudes. Only one of the aircraft in our formation had to drop out because of maintenance problems. In the clear, starlit night, we were able to frequently see not only the first McChord flight of six planes ahead of us but also six McGuire C-141s in the other formation. While the C-141s launched out of Dover AFB and McGuire AFB flew on the northern route, the C-141s from Charleston AFB and Pope AFB were flying the southern route.

Commercial airline pilots near our route of flight called to say hello and expressed their surprise at such a large formation in the skies of the central United States. As our formation neared Boulder City vortac, Nevada (the orbit fix), we began our enroute descent to our orbit altitude. Our flight flew a block altitude of 11,500 to 14,000 feet. As we flew over the Colorado river to begin our orbit, we could see 14 or 15 other aircraft making turns—a beautiful sight with the Colorado river as a backdrop. With so many different planes in the air at one time and in one location, our pilots were making full use of "see and avoid" techniques. The lead aircraft contacted the airborne command and control aircraft for update of drop zone winds and weather on UHF. We were in VMC and had cancelled IFR for this portion of the airdrop mission.

After approximately 20 minutes in the orbit area we departed on the low-level route to the drop zone. Upon crossing our first checkpoint we made a slight right turn to head for the IP (initial point), a road/dry wash intersection. Our navigator, Lieutenant Colonel Richard Paprowicz, was peering out the left-hand pilot's side window using low-level terrain charts to navigate. Major Leppert, the AC, was flying the plane while Captain Hal Yarbrough, the copilot, and Senior Master Sergeant Claude Newbold, the flight engineer, assisted the navigator as well as performing their primary duties. The scanner, Staff Sergeant Neal Mondloch, provided an additional and welcome set of eyes during this critical phase of flight.

At the 20 minute warning from Lieutenant Colonel Paprowicz, Staff Sergeants Benhard Nesheim and Brian Summ opened the pressure door and began preparations for the drop. Our aerial platforms included a jeep with trailer, and

TOP—Part of the dozen Starlifters at their "bed-down" location on the ramp at Dover.

BOTTOM—Load clear! A palletized Gamma Goat heads for the DZ during Gallant Eagle.
Both photos by Frederick A. Johnsen.

an Army gamma goat (1½-ton vehicle).

After passing the IP, we began our slow down and began looking for the first point of impact, 500 yards from the leading edge on centerline marked with the block letter "A." We had been briefed to look for timing panels with yellow smoke displayed 800 yards from the leading edge, 350 yards each side of centerline. As advertised, we saw the smoke and block letter, and began timing for the drop. And although the DZ was "only" 6,500 yards long and 2,000 yards wide, we went for a good PI. And according to our loadmasters who saw the load impact, we came very close.

Our drop winds at Gold DZ were less than 12 knots, as reported by ground observers, and the McChord lead ship crossed the drop zone only 30 seconds late. Of the 11 62d MAW C-141s across the drop zone, only one aircraft had a "no drop" due to anchor cable static line support problems. Another McChord Starlifter had the misfortune of having the aft end of one of the pallets strike the aircraft's tail cone. This caused sheet metal damage but the plane experienced no controllability problems. In all, 10 of the 11 heavy equipment McChord planes made successful drops. As we flew over the drop zone we spotted some A-10s circling overhead providing tactical air support for the operation.

Our DZ escape and recovery back to McChord was uneventful. As we stepped off the crew bus, we were greeted by a host of officials including the Wing Commander, Colonel Jerry P. Harmon, and members of his staff. And after that, we attended a mission debriefing at base operations. It had been a long, tiring mission, but the crew morale had remained very high throughout. The months of airdrop training and emphasis on flying safety had paid off. The crews had performed safely and had "delivered the goods." For now, though, those crews were ready for some well-deserved crew rest. In a few days the lead crew would attend a mission debrief at Travis AFB.

Gallant Eagle 82 was a true Total Force effort. Aircrews and support personnel from active duty, Reserve, and Air National Guard units had all worked together well in this largest airdrop in recent memory. The "goods" were delivered, on time and on target, thanks to the cooperation and professionalism of all the participants. ★

TOP and ABOVE—What it looks like from the ground. Nothin' but parachutes for miles and miles!

RIGHT—Headin' home! After a long day's night, a C-141 escapes from the DZ and heads for McChord and sleep!

Photo by Frederick A. Johnsen.

MAC INDIVIDUAL FLYING-HOUR MILESTONE AWARDS

Lt Col Thomas J. Geist, 9 MAS
Lt Col George V. Phillips, Jr., 8 MAS
Maj Robert R. Root, Jr., 11 AAS
Maj William J. Young, 8 MAS
CMSgt Swanson B. Brown, 18 MAS
SMSgt John E. Davis, 6 MAS
SMSgt Albert S. Goins, Jr., 105 TAS
SMSgt Joe D. Williams, 105 TAS
MSgt Henry B. Buchanan, 8 MAS

Col Eugene T. Fortson, 728 MAS
Lt Col Robert G. Bradley, 130 TAG
Lt Col Edward Forys, 36 TAS
Lt Col James A. Halvorson, Det 2, 1400 MAS
Lt Col Thomas L. Hoff, 815 WRS
Lt Col James P. Key, 185 TAS
Lt Col William L. Reynolds, 130 TAG
Wing Commander Roger Sweatman, RAF, Det 1, 1401 MAS
Maj Edward L. Coleman, Det 4, 40 ARRS
Maj James D. Hardman, 22 MAS
Maj Lance E. Hancock, 86 MAS
Maj Kurt H. Mueller, 36 TAS
Maj Billy D. Tudor, 56 MAS
Maj George B. Tullos, 118 TAW
Maj Stanly C. Widau, 86 MAS
Maj Lyle E. Wilson, Det 2, 1400 MAS
Capt Phillip R. Griffin, 9 MAS
Capt Thomas C. W. Keitel, 335 MAS
Capt James L. Livingston, 11 AAS
Capt Kenneth C. Matt, 9 MAS
SMSgt William R. Spradling, 130 TAG
SMSgt Donald R. Vandenbergh, 36 TAS
MSgt Robert D. Chandler, 130 TAG
MSgt Glen Ellison, Jr., 105 TAS
MSgt George F. Griffith, 130 TAG
MSgt Harold D. Moore, 185 TAS
MSgt William Mullen, 86 MAS
MSgt Thomas L. Thornburg, 130 TAG
TSgt Raymond L. Holder, III., 166 TAG

Lt Col William P. Logan, 37 ARRS
Squadron Leader Allen G. Houston, RAAF, Det 4, 40 ARRS
Maj Ronald A. Merino, Det 1, 37 ARRS
Capt Vincent F. Clancy, Det 4, 40 ARRS
TSgt David J. Luke, 71 ARRS

(ranks and units are those at time of award).

C.R. TERROR

C.R. goes "afowl" of a feathered flock.

Just look at that sky tonight, Sammy m'lad," exclaimed the Ace of Aerospace to his favorite right-seater. "Why there's so many stars out I can't even count 'em."

"That's right, Boss. And counting over 10 might prove difficult with your flight boots on," bantered the cheerful copilot.

"So that's what they taught in that assertiveness training course, hey," returned the Rotund One, enjoying his sidekick's new-found wit. "Well, I still love to fly the old Starlifter on these kinds of nights when the stars shine so brightly. And look, there's the Belt of Orion on the right and the moon is right next to it," continued the Star-struck Skipper ready to give a detailed tour of the heavens to his crew.

"Well, you're right about the moon, sir," Sammy complimented pleasingly. "But I believe that's the planet Venus next to the moon. See how it's among the brightest spots—" the competent copilot was cut-off in mid-correction.

"Nonsense, Sammy m'lad," muttered the Magic Major. "It's too bad Blinky's not flying with us tonight. He always knows where all these stars are and their strange names. He would substantiate my vast astronomical knowledge—if he were here, that is."

Quickly turning to a completely different subject in which he hoped Sammy had less knowledge, the Errant Aviator asked, "Speaking of real estate, Sammy, how high can these interest rates go?"

"Speaking of things that are high, Boss, I believe we're almost 300 feet above our assigned flight level," advised the able right-seater.

"Dastardly autopilot! Must have a malfunctioning altitude hold mode," defended C.R. sheepishly as he eased the B-model back down to the proper altitude. "Now as I was saying, Sammy. Uh, what was I talking about anyway?" questioned the Befuddled Field-Grader.

"I believe you were going to talk about high altitude penetration descents and ILS approaches, sir," reminded the right-seater. "You've got an instrument check next month, remember?"

"Ahh. Well, I'll just have to hit the books hot and heavy. And there's no time like the present, eh Sam?" pledged Major Terror whose V-file back at the squadron was packed with unposted changes and whose out-of-date Dash One was listed in the National Register of Historical Landmarks. "What's the hot topic of the month from the stan-eval weenies?"

"I believe they're emphasizing techniques for avoiding bird strikes. The wing has had a lot of damage recently," briefed Long Suffering Sam.

"Birdstrikes? I'll be ready. Now pass up the terrain chart for Andrews. I'll review it and the approach plates before I take a short snooze. It's never too early to be thinking about the approach," reasoned the Airedale of the Airways as he promptly yawned and closed his eyes.

"Engineer, copilot. Looks like the Chief is getting serious about flying. Maybe we'll have a good trip this time. What do you think?" whispered the right-seater being careful not to wake his dozing AC.

"I certainly hope so, sir," replied Sergeant Torque. "Colonel Fang would be amazed, not to mention relieved."

A couple of hours later, the Rhinestone Flyboy stretched, looked down at his 14-carat aluminum digital chronometer, then checked the present position and winds in the INS. Astutely assessing the time-rate-distance situation the World's Greatest Airlifter exclaimed, "Full speed ahead, Sammy, m'lad! We're nearly 10 minutes behind our scheduled blocks."

"Calm down, Sir. We'll make Andrews by 2200 local if the winds don't increase," explained the competent copilot. "We'll get those NORS parts there on time."

"Parts? What parts? Oh yeah, the engine. I remember now, the AC off the broken helicopter is supposed to meet us when we land," recalled C.R.

"Sir, I believe that Captain N.A. Hustle, also wanted us to have the Andrews command post relay our arrival to him when we land."

"Exactly right, Sammy," attested C.R. "Merely probing your grasp of operational detail. As you know, I depend on you to handle these trivial matters."

Major Terror picked up the trip folder and looked at the itinerary for the third time. "With a little luck, we'll be back at the home dome by 1 A.M.," mentioned C.R. as he pulled out his wallet. "Rats! Looks like I'm a little short on cash. I'll have to make an early morning rendezvous with the 'King Kard' automated teller at the base credit union. That mechanical marvel of financial wizardry always has an amply supply of loot."

"Why the need for cash in the middle of the night?" asked the right-seater.

"Why, don't you know it's *summertime*?" blustered C.R.

"So?" questioned Sam. "What does that have to do with cash in the middle of the night?"

"So!" Major Terror exclaimed. "As soon as we land back at home station I've got 20 days leave to the sea shore. It's sun, sail, surf and suds for me. Besides, I got this incredible price on a time-sharing rental condo at Bikini Dunes. It's ocean front and there's even an amusement park, or so I've been told. And the only thing I'll need before I hit the road is some folding money."

"Bikini Dunes, Boss? Don't you mean Folly Dunes?" asked Sammy.

"No. Bikini Dunes and I hear it's well named, but enough of this banter," concluded the Airlift Lothario. "We'd better prepare for our Andrews arrival. What's the weather, Sam?"

"Andrews Metro reports there's a fog bank between 1,000 feet and 2,000 feet. Below the fog bank, visibility is 7 miles plus," replied the right-seater. "And they've reported some migratory birds in the vicinity of the field."

"At this time of night, Sammy?" Birds gotta sleep *sometime*. Probably a figment in some flaky flyer's imagination. Descent check, engineer," requested C.R.

The Starlifter crew began their descent into Andrews. ATC momentarily leveled the B-model at 5,000 feet.

"Well, there's the fog layer at about 2,100 feet. It's about time you learned one of my fog penetration tricks," instructed the Ace of Airlift.

"Right, Boss. Uh, any sign of those birds?" reminded the competent copilot.

"Birds, what birds? There aren't any birds out tonight, Sam," asserted the All-Knowing Aviator.

About that time, the quiet of the Starlifter cockpit was shattered by the dull thuds of something hitting the aircraft. "Whack! Thump! Thump! Thump!"

"Yipes, Sammy! We're under bird attack," yelled C.R., ducking his head beneath the eye level of the Starlifter wind screen. "Battle stations, right full rudder, damage control report!" shouted the Silver-tongued Skipper, momentarily lapsing into naval jargon.

"Pilot, engineer. The scanner's going back to the cargo compartment to help Sergeant Ty Downs check for damage. And it sounded like the birds hit the radome, too."

Sammy calmed the Addled AC and directed a controllability check. After that, C.R. made a passable straight-in approach landing at Andrews. As the worried Warrior completed a walkaround inspection with Sergeant Torque, they counted the remains of eight ducks on number 2 and number 3 engine cowlings, the radome, and the left gear pod.

"Sammy," commented the Avian Ace, "It would appear we were victims of an unprovoked attack by a whole flock of Fowl Flyers. How was I to know migratory birds sometimes fly just above the fog layers? And because you didn't detect them in time, I may very well be forced to slip my vacation a day or two," commented the Ace of Alibis.

Sammy, feeling unjustly scolded, replied, "You could be right, Boss. You could very well be right."

Log Jam

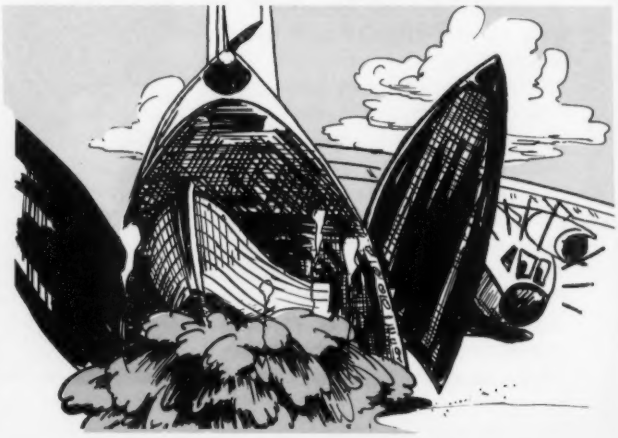
Write up: Number 4 tire almost needs changing.
Sign off: Almost changed number 4 tire.
Write Up: Intermittent rumbling noise-gear down
Sign off: Gear checks OK. Take Alka Seltzer.
Write up: Lost number 3 engine after 1.4 hours of flight.
Sign off: Found number 3 engine on right wing after 30-second search.

Delta *Up Front*

QUICK STOPPERS

"Certified Bilge Water"

The Starlifter crew was hauling two 26-foot-long boats back to the East Coast. These particular vessels were each equipped with an internal gas tank with a capacity of 70 gallons. They were certified by the shippers as containing only 35 gallons each to preclude inflight leaking of the gasoline—a very dangerous situation in any aircraft. Things seemed okay until passing FL 200. The loadmaster suddenly smelled strong gasoline fumes and hurried aft to check it out. What he found was gasoline gushing from the tank vent of both boats. They mopped up the gas as best they could. Meanwhile, the aircraft commander diverted into a nearby MAC base where fortunately an uneventful landing was made before something could spark the explosive fumes. When the boats were off-loaded, they found one of the tanks was completely full and the other was about 90 percent full. Fifty gallons were drained from each tank and the load was recertified for air shipment. Beyond the aircrew's normal checks of the cargo they carry, there's a certain amount of trust MAC crews have to put in those who sign the 1387-2 forms certifying that the load is properly prepared for air shipment. This incident represents a breach of that trust and in this case, put the aircrew in grave danger.



The Death of a Step-van

This little ditty falls under the "where-have-I-heard-that-one-before" category. Here's the setting. The young Herk had to have a max power run on numbers 1 and 4 engines to verify some maintenance corrective action. The GTC failed to start, and in the process of troubleshooting the catankerous GTC, the flight line supervisor also noticed the ground test valve was open. The supervisor requested the pilots bleed down the system so said valve could be closed. That done, someone decided to use an MA-1A power cart vice the GTC to speed things up a bit. Power cart connected, the next words were, "clear number 4."

As the prop began turning, the alert flight line supervisor noticed the aft ground wire was still connected and walked safely around the parked Herk to remove it. Realizing the engine start sequence had begun, he also removed the chocks. By this time, you can see what is about to happen to our unwary engine runners.

Let's recap the chain of events. The "before-starting-engines checklist" was interrupted by the failure of the GTC to start, and the AC didn't insure the checklist was complete before engine start. Now in the overall scheme of things, this inevitably led to the emergency brake system being depressurized. So even though all switches were in their proper positions, not all associated functions associated with those switches were happening. Result: no emergency brakes. Unfortunately, the aircrew didn't realize this and pressed on with engine start.

As number 4 came on speed, the chockless and brakeless airplane moved forward and to the left seemingly drawn to a nearby step-van used by the wrench benders. Both pilots hit the brakes and the copilot cycled the brake selector switch, but the aircraft continued toward the van. The pilot attempted to use the nosewheel steering but to no avail. (Remember, only number 4 was on speed.) When the collision was imminent, the copilot feathered number 4 just as the Herk struck the van causing it to overturn. Fortunately, there were no injuries.

Three basic lessons can be learned from this incident:

- Deviations from normal procedures usually contain potential pitfalls. Maintain thy situational awareness.
- Crew coordination can keep you out of trouble.
- To "follow" the checklist is a healthy habit.
- To "understand" the checklist is a *healthier* habit.

Cranky Bell Crank

During a local proficiency flight in a non-standard holding pattern, the WC-130H copilot was rolling out of a 30° left bank turn. The crew heard a loud pop and felt the ailerons binding. Initiating a slow bank turn to the right, the crew encountered binding at 10° right bank. The Herk crew declared an emergency at this point and brought the plane back to level flight. On final, after slowing to 133 knots, additional aileron binding occurred at 5° right bank. After a successful landing the aileron controls once again moved freely. Postflight maintenance inspection, however, found a bell crank guard had become loose in its mount. When the Herk crew started using the ailerons, the bell crank contacted the guard at 10° of movement and caused the cable to bind.

"Steerike One!"

The Huey helicopter crew had just off-loaded an Army team on a practice infiltration mission. The left gunner noticed an entrenching tool (small folding shovel to the rest of us), in its standard one-each olive-drab carrying case, lying a few feet from the helicopter. Being the helpful sort, the gunner requested the pilot hold his position while he unstrapped, got out and gave the shovel back to the Army troops who were only about 20 yards away. Picking up the tool, the gunner gave it a healthy side-arm toss toward the troops as he turned and jumped back aboard. The flight engineer heard a metallic thump and asked if the tool had hit the whirling rotor blades. The gunner didn't think so and offered the following alternative explanation for the thump in question. After unbuckling his harness, it hit the floor causing the sound. To support his point, he even repeated the dropping of the harness. Its heavy metal buckles did make a metallic thump as it hit the floor. After a brief discussion, everyone on board was persuaded by the gunner's logical argument. So they continued the flight with no problems. But low-and-behold, after they shutdown back at home base, they discovered damage to the main rotor blades during postflight inspection. A few hours later, all doubts as to the cause of this mishap were put to rest when the "remains" of the wayward entrenching tool were recovered by another helicopter crew flying into the same spot.

Notable Quote

Traffic Watch

ATC to Aircraft: "You have traffic at 10 o'clock, 6 miles."
Aircraft to ATC: "Give us another hint—we've got digital watches."

—Golden Contrails—

AFTER DEADLINES

TMF NOTES WITH SORROW THE PASSING OF COLONEL CARL J. CRANE, a true aviation pioneer and a friend of The MAC Flyer. In the January and February 1980 isssues of TMF, we ran an article entitled "Blind-Flying's Men of Vision." Written by then Supervising Editor, Major Jim Gibson, it detailed some of the early pioneering work of Colonels William C. Ocker and Carl J. Crane. These "Men of Vision" made historic contributions to the science of instrument flight. Among Colonel Crane's numerous accomplishments in aviation was the book entitled Blind Flying in Theory and Practice. Coauthored with Colonel Ocker, it spelled out the first needle-ball-and-airspeed procedures necessary to retain aircraft control during IMC. His research at Wright Field where he teamed up with Raymond Stout and George Holloman led to the development of automatic flight equipment and this work culminated in the first fully automatic "hands-off" landing, for which Colonel Crane was awarded both the Mackay Trophy and the Distinguished Flying Cross in 1939.

While visiting MAC headquarters some 40 years later, Colonel Crane was gracious enough to share with us some of his historic experiences and illuminating insights about instrument flight. We all felt like "fledgling flyers" in the presence of such a "man of vision."

C-5s GET WEATHER RADAR/FSAS--Two C-5s, 70-0451 and 69-0009, are the first Galaxies to be equipped with both the new Fuel Savings Advisory System (FSAS) and the new color weather radar. Aircraft 0009 is presently at Lockheed-Georgia being modified with the new color weather radar and accom panying new, smaller radome. After completion of the modification, it will then be flown back to Travis for installation of the FSAS. The other Galaxy is at Travis now having the FSAS installed and will be flown to Lockheed-Georgia for the radar modification after the FSAS is installed. Production of the color weather radar fpr the C-5 is scheduled to begin in July 1983.

HERE COME THE STARLIZARDS--MAC's fleet of C-141Bs will really take on a different look as each aircraft emerges from scheduled depot maintenance. The familiar gray and white paint scheme will be replaced by a camouflage paint job of greens, grays and other assorted tints. Recommended by the MAC Readiness Initiatives Group after an exhaustive study on how to enhance combat readiness, the new camouflage will cost no more than a regular paint scheme. The program calls for 39 Starlifters to be repainted each year until program completion. Thirty seven "Starlizards" are already flying as of this writing.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1982-564-017/3

MAC FLYING SAFETY
Beware the AWTH